Daylily Rust Alert
For Green Industry Personnel

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A new disease on daylilies (Hemerocallis spp.), daylily rust, may become an increasing problem disease for daylily growers. The rust has never been previously described on daylilies in the United States, and was first identified in Georgia in August 2000. It currently has been identified in Georgia, Florida, Alabama and Sou Carolina. Daylily rust is caused by the fungus Puccinia hemerocallidis. There is son uncertainty over the species designation of the fungus because there are differenc in spore morphology from specimens obtained from Georgia and those obtained from Florida. However, the rust seen on daylily samples in Georgia appears to be I hemerocallidis.

Daylily rust is native to Asia (China, Japan, Taiwan, USSR, and Ryukyu Islands) ar it is believed to have been introduced into at least one Georgia nursery from plant material originating from Central America. Daylily plant material is commonly shipped into the United States from Costa Rica, Guatemala, Honduras, Mexico, Bahamas, South Africa, and the Netherlands. However, most of the daylilies produced in these countries, in particular from Central America, originate from the United States. Therefore, the origin of the daylily rust is unknown. It is very possib that infected plant material from the U.S. was shipped to Central America, and the new infested daylily divisions were shipped back.

Daylily rust is a concern for nurseries and gardeners because daylilies are traditionally thought of as pest-free plants. It will be necessary to remove all infected foliage and use fungicides at regular intervals to control daylily rust. Very little is known about the rust lifecycle. We are currently studying the rust and hope to have more information over the next year. What is known about P. hemeorcallic is that it is a heteroecious rust, meaning that it requires two different hosts to complete its lifecycle. Rusts may produce up to five different spore stages in its lifecycle. The uredinial/telial host is daylily in the Liliaceae family, and the alternat (spemagonial/aecial) host is the herbaceous perennial, Patrinia spp. in the Valerianaceae family. Patrinia scabiosifolia is produced in some Georgia nurseries, but so far rust has not been found on any plant in Georgia. In a recent pest alert i American Nurseryman, it was stated that Hosta was an alternate host for daylily rust. In published descriptions of the rust from Japan, Hosta spp. were reported as host for P. hemerocallidis. However, no Hosta plant has been infected by daylily ru in inoculation studies in Georgia, and at this point Hosta is not considered a host fo the rust.

The presence (or absence) of the alternate host, Patrinia, does not affect daylily ru survival or spread because the rust can survive on and infect daylilies without completing lifecycle. The uredinial spore stage is often referred to as the "repeatin stage, and it is the spore stage that can re-infect the same host plant. What compounds daylily rust survival and spread is that there are dormant and non-dormant daylily varieties. So, although the rust may not survive the winter on dormant varieties, it will on non-dormant varieties, as well as on older leaf tissue during milder winters.

The urediniospores of daylily rust are bright orange and are produced on both the upper and lower leaf surfaces in pustules (Figure **D, E, and F**). The spores are spread by wind, and we have found that new leaves can be infected by exposing plants to 100% humidity for 24 hours with plenty of leaf moisture. Within 3-5 days after exposure, light yellow, water-soaked spots develop on the upper leaf surface

where infection occurred. New uredinia pustules containing urediniospores are produced within 7-14 days after infecting plants.

Daylily varieties appear to differ in susceptibility to the rust. The variety 'Pardon M appears to be the most susceptible, and is the one that the rust was first discover on in Georgia and Alabama. Symptoms range from bright yellow spots to streaks c 'Pardon Me' (Figure **A, D, and E)**, to smaller, water-soaked tan spots with darker borders on 'Gertrude Condon' (**Figure B**). The rust obtained from Florida specime causes much leaf yellowing on some varieties and smaller, discrete spots (**Figure C**).

The rust has been identified in Georgia, South Carolina, Alabama and Florida. A survey of other states by the Department of Agriculture in each state is currently underway and will continue through this spring and summer to determine the distribution of the rust in the U.S. The Georgia Department of Agriculture (GDA) inspectors will begin a statewide inspection of daylily growers to look for the rust now that many daylily varieties are breaking dormancy. The main problem with conducting a thorough survey is that there are hundreds of nurseries of all sizes producing daylilies and it may be impossible for the GDA inspectors to get to all of them. If Extension agents visit daylily producers in their counties, look for the rust and if found please submit a suspected rust-infected plant to the Plant Disease Cli in Athens so we can positively identify and confirm the rust. Contact Dr. Jean Williams-Woodward (jwoodwar@arches.uga.edu), Extension Plant Pathologist, if y have questions or concerns about daylily rust.

A. B. C.

D. E. F.